IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

Peter Lundh — Atty. Ref.: 2380-57

Serial No. 09/514,144 — Group: 2666

Filed: February 28, 2000 — Examiner: M. Jagannathan

For: INTERCONNECTION LINK REDUNCANCY IN MODULAR SWITCH NODE

Before the Board of Patent Appeals and Interferences

BRIEF FOR APPELLANT

On Appeal From Final Rejection
from Group Art Unit 2666
Telefonaktiebolaget LM Ericsson (publ)

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TABLE OF AUTHORITIES

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Before the Board of Patent Appeals and Interferences

In [redacted]ent Application of

LUNDH et al.

Serial No. 09/514,144

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Title: INTERCONNECTION LINK REDUNDANCY IN A MODULAR SWITCH NODE

Atty Dkt. 2380-57
C# M#
TC/A.U.: 2666
Examiner: M. Jagannathan
May 14, 2004

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

☐ **Correspondence Address Indication Form Attached.**

☐ **NOTICE OF APPEAL**
Applicant hereby **appeals** to the Board of Patent Appeals and Interferences from the last decision of the Examiner. ($ 330.00) $

☒ An appeal **BRIEF** is attached in triplicate in the pending appeal of the above-identified application ($ 330.00) $ 330.00

☐ Credit for fees paid in prior appeal without decision on merits -$ ( )

☐ A reply brief is attached in triplicate under Rule 193(b) **(no fee)**

☐ Petition is hereby made to extend the current due date so as to cover the filing date of this paper and attachment(s) **($110.00/1 month**; $420.00/2 months; **$950.00/3 months**; $1480.00/4 months) $

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☐ Applicant claims "Small entity" status, enter ½ of subtotal and subtract -$( )
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Any future submission requiring an extension of time is hereby stated to include a petition for such time extension. The Commissioner is hereby authorized to charge any deficiency, or credit any overpayment, in the fee(s) filed, or asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our **Account No. 14-1140.** A duplicate copy of this sheet is attached.

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By Atty: John R. Lastova, Reg. No. 33,149

Signature: John R. Lastova

5/19/04 #9

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

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* *

May 14, 2004

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

Sir:

This is an appeal to the Board of Patent Appeals and Interferences from the last decision of the Examiner dated December 19, 2003.

REAL PARTY IN INTEREST

The real party in interest is the assignee, Telefonaktiebolaget LM Ericsson (publ).

RELATED APPEALS AND INTERFERENCES

There are no other appeals related to this subject application, and there are no interferences related to this subject application.

STATUS OF CLAIMS

Claims 1, 3-7, 10-15 and 17-25 stand rejected under 35 U.S.C. §102(e) as being anticipated by Chen et al. (U.S. Patent 6,353,593). Claims 2 and 8-9 stand objected to as

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Patent Application of

LUNDH et al. Atty. Ref.: 2380-57

Serial No. 09/514,144 TC/A.U.: 2666

Filed: February 28, 2000 Examiner: M. Jagannathan

For: INTERCONNECTION LINK REDUNDANCY IN A MODULAR SWITCH NODE

* *

May 13, 2004

Mail Stop Appeal Brief - Patents
Commissioner for Patents
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Alexandria, VA 22313-1450

APPEAL BRIEF

Sir:

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being dependent upon a rejected base claim but would be allowable if rewritten in independent claim form. Claim 16 is allowed.

STATUS OF AMENDMENTS

No amendments have been filed since the date of the Final Rejection. A telephone interview was conducted with the Examiner on March 18, 2004 to discuss the final rejection. The Examiner decided to maintain the final rejection.

SUMMARY

The invention relates to modern telecommunication networks which employ multiple switch nodes that communicate with each other. As the switch nodes become increasing large in terms of their capacity to handle data, the physical structure for the switch node will likely exceed one physical switch module board (for example, one rack). As a result, the physical infrastructure for the node is often based on several physical switch modules, each containing a number of boards. The modules communicate with one another by way of internal links so that the entire group of switch modules acts as a single cohesive switch node. The reliability of these internal interconnection links between the several modules is crucial. If any interconnection link fails, the entire node operation is jeopardized. Accordingly, redundant interconnection links between modules within one switch node are desirable.

Figure 1 (reproduced below) shows an example telecommunication system 10 that includes switch nodes A-E communicating with each other through various communication paths. These switch nodes A-E provide access points for external devices and networks such as elements 12-20 as shown.

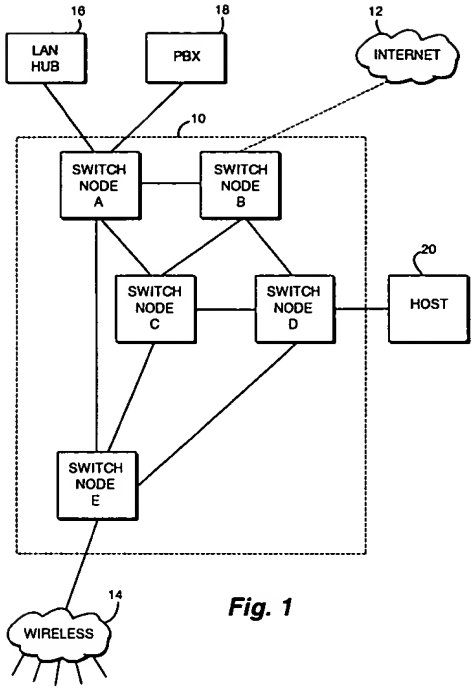
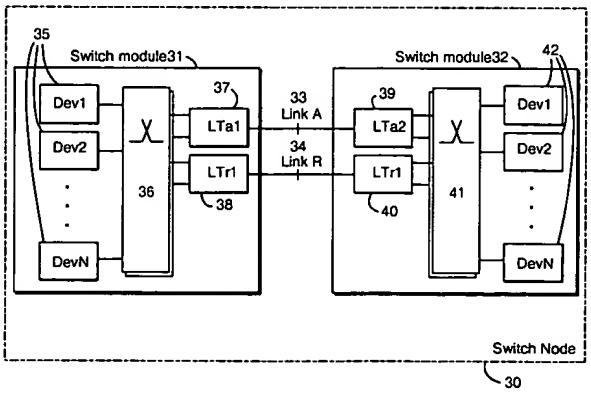


Fig. 1

Figure 3 (reproduced below) illustrates an example embodiment of one switch node 30 that includes two switch modules 31 and 32. Each switch module includes a number of device boards (DEV) 35, 42 and a switch core 36, 41. On the other side of each switch core is a link termination boards (LT). Switch module 31 includes two link termination boards 37 and 38, and switch module 32 includes LTs 39 and 40. Switch module interconnection link 33 (link A) couples link termination board 37 and link termination board 39.

Fig. 3



Since switch modules 31 and 32 must communicate with each other in order to cooperatively implement the switch node 30, it is imperative that the module interconnection link be reliable and secure. For this reason, a second redundant interconnection link 34 (link R) is provided between the two switch modules 31 and 32 to guarantee switch node operation. If link 33 fails, the data flow is rerouted between the switch modules over the redundant link 34.

When a connection is set up through the switch node 30, each data packet includes a routing tag, e.g., a routing tag A, when the primary link A is intended for use (i.e., as in normal circumstances). In the non-limiting example where the switch the node is an asynchronous transfer mode (ATM) switch node 30, the connection is configured on both of the link terminations (LTs) with the same virtual channel identifier (VCI) and the same link segment virtual path identifier VPI/VCI. Thus, when a data packet with a routing tag A is sent through the switch core 36 by the device 35, for example in switch module 31, it is translated by the link termination board either to link A or link R, depending on the link state information known by each link termination board. The routing tag translation is performed in the link termination board to ensure that the packet is transferred to the switch module 32 over the appropriate link. Example embodiments use one or both of the links 33 and 34, and different routing tag values with different tag value translations are described. In each embodiment, each data packet is provided with a routing tag to identify the active interconnection link so that the data packet is output to the active link identified by the routing tag.

ISSUES

The Ericsson appeal presents two main issues:

- **Claim Interpretation**. Claim terms must be interpreted consistent with their commonly understood meaning by those skilled in the art and consistent with the manner in which those terms are used in the specification. Each rejected independent claim recites a common or single switch node that includes internal, interlinked first and second switch modules. May a switch node, as that term is normally used in the art and as defined in the specification, reasonably be equated to a public telecommunications network that includes a plurality of switch nodes? May interlinked first and second switch modules internal to a switch node reasonably be equated to physically separate nodes?

- **Anticipation**. In order for a reference to be anticipatory, it must disclose each and every feature recited in the rejected claim. Independent claims 1, 5, 13, 17, and 20 all recite a switch node that requires multiple elements not disclosed by Chen in a single switch node. Is the anticipation rejection based upon Chen proper?

GROUPING OF CLAIMS

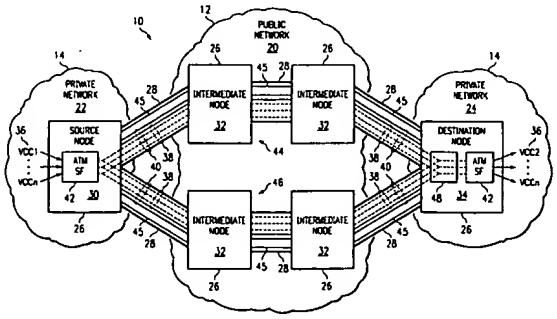
The claims do not stand or fall together. Claims 7, 10, 11, and 12 stand or fall with claim 5. Claims 14 and 15 stand or fall with claim 13. Claims 21, 24, and 25 stand or fall with claim 20. The pending claims on appeal are separately argued.

ARGUMENT

A. The Examiner's Interpretation of Claim Terms and Technical Terms in Chen Is Inconsistent with How These Terms are Defined and Understood by Those Skilled in the Art

The broadest, reasonable interpretation of claims terms given during examination must be consistent with the interpretation that those skilled in the art would reach.[1] Each of the independent claims recites a "switch node" that includes within that node first and second "switch modules." The Examiner construes a switch node as the public network 20 shown in Figure 1 of Chen. The Examiner further contends that the intermediate switch nodes 32 correspond to the claimed first and second switch modules contained with the switch node. The Examiner identifies transmission links 44 and 46 as corresponding to first and second redundant links. The Examiner's interpretation of these claim terms and of Chen is unreasonable and inconsistent with the manner in which these skilled in the art would understand those terms and would interpret Chen.

Chen's Figure 1 is reproduced below.



Chen plainly describes the cloud 20 in Figure 1 as a public telecommunications network—not a switch node. Chen further describes that the network 20:

includes a plurality of nodes 26 interconnected by transmission lines 28.

[1] *In re Cortright*, 165 F.3d 1353, 1359 (Fed. Cir. 1999).

> The nodes 26 each comprise a network element (NE), capable of communicating traffic in a telecommunication system 10. The network element (NE) may be a *switch*, router, add/drop multiplexer or other suitable device capable of directing traffic in the telecommunications system 10.

Column 3, lines 24-29 (emphasis added). Still further, Chen explains that the transmission lines 28 between the nodes "provide a physical interface between the nodes 26" and are "capable of transporting traffic between the two nodes 26." Column 3, lines 30-38. Contrary to the position taken by the Examiner, Chen refers to element 20 as a network including multiple switch nodes 26. Chen does not describe any one of the switch nodes 26 as having plural switch modules. Thus, the Examiner's interpretation is inconsistent with the way in which those claim terms are used in Chen.

Moreover, those skilled in the art would not consider a network of nodes as corresponding to a node. For example, the McGraw-Hill Dictionary of Scientific and Technical Terms, 5th Edition, Copyright 1994, defines node as "a junction point *within a network*." Page 1349 (emphasis added). Freeman describes in his text, *Telecommunication Systems Engineering*, 3rd Edition, Copyright 1996, by Wiley & Sons, Inc., that:

> a network is a means of connecting subscribers...a call is initiated a traffic source and received at a traffic sink. *Nodal points or nodes in a network are the switches.*

See page 6, in chapter 1 entitled, "Some Basics in Conventional Telephony" (emphasis added). On page 7, Freeman further states "[l]et us call a network a *grouping of interworking telephone exchanges*" (emphasis added).

So it is clear that a person skilled in telecommunications would not consider Chen's public network 20 as corresponding to a single switching node or a single switching node to be a network. Nor would such a skilled person consider the separate nodes 26 in the network 20 to be switch modules internal to a single switch node. Thus, even if one assumed that the terms "switch node" and switch modules were not defined or explained in the instant specification, the Examiner still must read these claim terms and the terms as used in the Chen reference as one skilled in the art would.[2]

In addition, the Federal Circuit has made it clear that claims are not to read in a vacuum—even during United States Patent and Trademark Office examination. Claim limitations are to be "interpreted in light of the specification giving them the 'broadest, reasonable interpretation.'"[3] As described above, the terms network, switch node, and switch module have been illustrated and explained in the specification. A telecommunication system 10, which corresponds to a network of switch nodes, as shown in Figure 1, is described on page 4 of the instant specification. Indeed, the network 10 in Figure 1 of the instant application looks quite similar to the network 20 in Figure 1 of Chen in that they both include a plurality of switch nodes coupled together by communications links, and they both are connected to other networks. Figure 3 of the instant application clearly illustrates that a switch node 30 includes two internal switch modules 31 and 32. Pages 4 of 5 of the specification confirm that each switch module includes a variety of devices coupled to a switch core and at least two link termination boards. The internal switch modules are interconnected by two internal links 33 and 34.

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[2] *Rexnord Corp. v. Laitram Corp.*, 274 F.3d 1336, 1342 (Fed. Cir. 2001).
[3] *In re Marosi*, 710 F. 2d 799, 802 (Fed. Cir. 1983) (*quoting In re Okuzawa*, 537 F. 2d 545, 548, CCPA 1976).

Reading the instant specification and considering its figures, a person skilled in the art would understand that the independent claims on appeal are directed to a single switch node (not to a network of nodes) and to the interlinking of switch modules within that single switch node to ensure reliable communications between the modules within the node.

The Examiner's claim construction and interpretation of Chen are completely at odds with the meanings that a person skilled in the art would attribute to those terms and to the meaning attributed to those terms in the instant specification and figures. Chen and the instant application use these words consistently and in the way a person of ordinary skill would use them. The Examiner is ignoring the commonly understood and accepted meanings of the terms switch node, switch module, and network. During the interview with the Examiner, the Examiner justified this final rejection, explained that element 20 of Chen is a "big box" that includes four smaller boxes 26. While Appellants do not disagree with this characterization of the drawing in Figure 1 of Chen, it is beside the point. The appealed claims are not claiming boxes within boxes.

B. Chen Fails to Disclose Each and Every Feature of the Rejected Claims.

To establish that a claim is anticipated, the Examiner must point out where each and every limitation in the claim is found in a single prior art reference.[4] Every limitation contained in the claims must be present in the reference, and if even one limitation is missing from the reference, then it does not anticipate the claim.[5] Chen fails to satisfy this rigorous standard.

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[4] *Scripps Clinic & Research Found. v. Genentec, Inc.*, 927 F.2d 1565 (Fed. Cir. 1991).
[5] *Kloster Speedsteel AB v. Crucible, Inc.*

Chen describes a protection architecture for virtual channel connections (VCCs) in a telecommunications network. Virtual channel connections are bundled together into a virtual path connection (VPC) that can be protection-switched as a unit in response to a node-external transmission line failure. As a result, only a single "construct" must be protection-switched, and pathway selection is simplified at the determination of the virtual channel connections. As is evident from Figure 1, Chen's focus is on the transmission line interconnections between physically separate nodes 26. Each such node includes:

> a network element (NE) capable of communicating traffic in a telecommunications system 10. The network element (NE) may be a switch, router, add/drop multiplexer or suitable device capable of directing traffic in the telecommunication systems.

Column 3, lines 24-29. The transmission lines 28 shown in Figure 1 transport "traffic between two nodes 26." Column 3, line 38. Source and destination nodes 30 and 34 each include ATM switch fabric 42 that performs address translation for switching labels in the traffic and transmits the traffic in accordance with the translated switching labels. The switching fabric at source node 30 bridges the virtual path connection 38 onto a working transmission link 44 and a protection transmission link 46 extending across the "protection domain" to the destination node 34.

The independent claims on appeal are <u>not</u> directed to a protection domain defined between two different nodes such as Chen's source and destination nodes 30 and 34. Rather, the independent claims are directed to redundancy protection *within a single node*. The single node includes multiple switch modules, each module containing multiple boards. The modules communicate with one another via internal links so that

the modules that make up the single node act as a single cohesive node unit. It is the reliability of the interconnection links between the plural modules in the single switch node that the independent claims address. Indeed, if any internal node interconnection link fails between two modules, the entire switch node operation is jeopardized.

Internal interconnection links between multiple switch modules in a single switching node are simply not described in Chen. Chen focuses on entirely different issues. Thus, it is not surprising that Chen lacks features recited in each appealed independent claim.

For example, claim 1 recites "interlinking first and second switch modules in *a common switch node*." Claim 5 recites "a module in a switch node operatively linked with a second module in the same switch node." Claim 13 recites *a single* switch node that comprises "first and second switch modules operatively linked to each other." Similarly, claim 17 recites a switch node that comprises "a first switch module operatively communicating with a second switch module through a set of links." Claim 20 recites *a single* switch module that comprises:

> a number N of first links and a number M of second links, all connecting first and second switch modules.

This basic features of a *single switching node* that includes at least two switch modules interlinked by first and second redundant links are not disclosed by Chen.

In addition, the Examiner confuses the *internal* protocol layer of independent claim 1, which is confined to the *internal* operation of a *single* switch node, with an *external* protocol of communicating between physically separate nodes using a standard ATM protocol. The "over-riding said destination address with the routing tag identifying

only an active one of the first and second links" recited in claim 1 relates to an *internal* encapsulation of a cell or a packet that performs protection switching *within the node* without using the ATM layer. Indeed, the *node internal* encapsulation of the data packets ensures freedom of the *single* node to switch any data format type. The information that the switching node uses to route packets and to perform protection switching *within the node* is confined to the *internal* protocol layer. The internal protocol layer is not "visible" to the external signals sent to and from the node.

Claim 5 recites a routing tagger that applies a "node-internal routing tag to the data packets in a stream to direct the stream to only one of the first and second redundant links" contained within the node. Chen does not describe attaching a "node-internal routing tag" to the data packets for routing the packets between modules contained *within the single node.*

In claim 13, Chen fails to disclose a *single* switch node with first and second switch modules, where each module includes plural "device boards outputting data packets having standard routing tags" and a switch core to "overwrite the standard routing tags with modified routing tags." Those modified routing tags are used by the switch core for routing purposes *within* that switch node in order to route the data packets via the first and/or second link.

Regarding the single switch node in claim 20 that includes first and second switch modules, Chen does not disclose that each switch module includes a:

> device-side switch core interface between the device circuit and the switch core to add internal routing tags to the data packets identifying only the N number of currently operable first and second links

coupled with the claimed link-side switch port interface that reads "the internal routing tags and routes the data packets to the N number of currently operable first and second links."

The appealed claims and the subject matter described in Chen are directed to two entirely different types of communication. Chen focuses on external communications between physically separate nodes. The appealed claims focus on redundant communications between modules in a *single* switch node. Lacking multiple features recited in the appealed independent claims as described above, the rejection based upon Chen is improper and should be withdrawn.

Other features of the independent and dependent claims are also lacking from Chen. For example, in claim 1, Chen fails to disclose the step of "over-writing said destination address with a routing tag identifying only an active one of the first and second links" in the context of internal communications within a single switch node between first and second switched modules. Chen does not provide any details of the internal structure and working of the intermediate public network switch nodes 26. Lacking any first and second switch modules within those nodes 26 coupled by first and second redundant links, Chen fails to disclose the step "outputting the data packet only to said active one said of first and second links identified by the routing tag."

Dependent claim 3 further recites "passing the data packet through a switch core and therein performing the overwriting step." The Examiner fails to identify a switch core within a first or second switch module internal to a common switch node. In addition, Chen fails to disclose "detecting a fault condition in the active one of said first

and second links," as recited in dependent claim 4, because Chen does not disclose detecting faults in any node-internal links.

Regarding independent claim 5, the Examiner further fails to point out where Chen discloses a module within a single switch node that includes:

> a routing tagger to receive a stream of data packets destined for the second module [within the same switch node] and to apply a node-internal routing tag to the data packets in the stream to direct the stream to only one of the first and second redundant links.

In addition to not disclosing a node-internal routing tagger, there is no disclosure in Chen of a node-internal routing tag attached to data packets.

Dependent claim 6 further recites that the module within the single switch node includes a set of device boards, a switch core, and first and second redundant link terminals, where the first link is associated with the first routing tag, and the second link is associated with the second routing tag. The Examiner fails to identify where these features are found in an individual switch module contained within an individual switch node in Chen.

Claim 13 further recites that each of the first and second switch modules, (both are contained within a single switch node), contain (1) device boards that output data packets with standard routing tags, (2) a switch core that receives those data packets and overwrites the standard routing tags with modified routing tags, (3) first and second redundant link terminals, (4) a first link coupled to the first terminal associated with a first unique one of the modified routing tags, and (5) a second link coupled to the second link terminal that is associated with a second, unique, modified routing tag. This combination of features is not disclosed in Chen.

Independent claim 17 further recites "a first set of links actively carrying data packets between the first and [switch] modules [contained within single switch node], and at least one extra link that remains idle until a failure is detected in any one of the first set of links." Chen's teaching relates to *node-external links* and not to links *internal* to a single switch node between switch modules that are themselves internal to the switch node. Nor does Chen disclose that a single switch node includes "multiple extra links, each available to take the place of any failed ones of the first set of links and carrying assigned ones of the data packets," as further recited in dependent claim 18. Chen also lacks a single switch node that includes "internal routing taggers to tag the data packets to particular ones of the first set of links until any one of the first set of links fails whereupon said taggers instead tag the data packets otherwise destined for the failed link to the extra link," as further recited in claim 19. The Examiner fails to identify any such internal routing taggers within Chen.

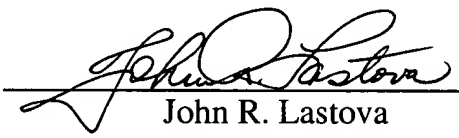
Independent claim 20, in addition to reciting N first links and M second links connecting first and second switch modules within a single switch node, further recites that *each internal switch module includes* a fault detector, a switch core, a device-side switch port interface "to add internal routing tags to the data packets identifying only the N number of currently operable first and second links," and a link-side switch port interface. The Examiner fails to identify in Chen where each one of these elements recited in claim 20 is found in each of two switch modules contained within a single node. Nor does Chen disclose that the number of first links N is at least two as recited in claim 22, or that the number M second links is at least two as recited in claim 23.

CONCLUSION

The issues on appeal must be decided in Appellants' favor. The claim constructions and term definitions applied by the Examiner are unreasonable, contrary to the well-understood meaning of such terms by those skilled in the art, and inconsistent with the meanings used in the specification. Chen also fails to disclose many features of the independent and dependent claims. The anticipation of rejection should be reversed, and this case passed to allowance.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: 
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APPENDIX

CLAIMS ON APPEAL

1. A method of interlinking first and second switch modules in a common switch node, comprising the steps of:

providing first and second redundant links between said first and second switch modules;

receiving a data packet with a destination address;

over-writing said destination address with a routing tag identifying only an active one of the first and second links; and

outputting the data packet only to said active one of said first and second links identified by the routing tag.

3. A method according to claim 1, further including the steps of:

passing the data packet through a switch core and therein performing the overwriting step.

4. A method according to claim 1, further including the steps of:

detecting a fault condition in the active one of said first and second links; and thereafter

the over-writing step overwrites said destination address with the routing tag identifying the other of said first and second links.

5. A module in a switch node operatively linked with a second module in the same switch node, comprising:

first and second redundant links connecting the first module to the second module; and

a routing tagger to receive a stream of data packets destined for the second module and to apply a node-internal routing tag to the data packets in the stream to direct the stream to only one of the first and second redundant links.

6. A module according to claim 5, further including:

a set of device boards outputting the data packets with standard addresses;

a switch core in communication with the set of device boards to receive the data packets and overwrite the standard addresses with the node-internal routing tags;

first and second redundant link terminals in communication with the switch core;

the first link coupled to the first link terminal and to the second module, said first link associated with a first unique one of the routing tags; and

the second link coupled to the second link terminal and to the second module, said second link associated with a second unique one of the routing tags.

7. A module according to claim 6, wherein:

at least one of said first and/or second link terminals receive the data packets;

the first link terminal passes the data packets to the first link if the switch core overwrites the standard address with the first unique one of the routing tags; and

the second link terminal passes the data packets to the second link if the switch core overwrites the standard address with the second unique one of the routing tags.

10. A module according to claim 7, wherein:

said set of device boards create said data packets without regard to the redundancy of the first and second links.

11. A module according to claim 7, wherein:

said switch core overwrites the standard addresses with the first unique one of said routing tags under a first operational condition, and

said switch core overwrites the standard addresses with the second unique one of said routing tags under a second operational condition different from said first operational condition.

12. A module according to claim 11, wherein the first operational condition identifies a detected normal condition in the first link and the second operational condition identifies a detected fault condition in the first link.

13. A switch node, comprising:

first and second switch modules operatively linked to each other, each module having:

a set of device boards outputting data packets having standard routing tags;

a switch core in communication with the set of device boards to receive the data packets and overwrite the standard routing tags with modified routing tags;

first and second redundant link terminals in communication with the switch core;

a first link coupled to the first link terminal and to the other of said modules, said first link associated with a first unique one of said modified routing tags; and

a second link, redundant to the first link, coupled to the second link terminal and to the other of said modules, said second link associated with a second unique modified routing tag, wherein:

at least one of said first and second link terminals receive said data packets, and wherein:

said first link terminal passes said data packets to the first link when the switch core overwrites said standard routing tag with said first unique one of said modified routing tags, and

said second link terminal passes said data packets to the second link when the switch core overwrites said standard routing tag with said second unique one of said modified routing tag.

14. A switch node according to claim 13, further including:

a third module between said first and second modules, comprising a space switching module.

15. A switch node according to claim 13, further including:

a plurality of modules between said first and second modules, each comprising a space switching module.

17. A switch node comprising:

a first switch module operatively communicating with a second switch module through a set of links;

said set of links including a first set of links actively carrying data packets between the first and second modules and at least one extra link that remains idle until a failure is detected in any one of the first set of links, whereupon the extra link takes the place of the failed link in carrying assigned ones of said data packets.

18. A switch node according to claim 17, including:

multiple extra links, each available to take the place of any failed ones of the first set of links in carrying assigned ones of the data packets.

19. A switch node according to claim 17, further including:

internal routing taggers to tag the data packets to particular ones of the first set of links until any one of the first set of links fails whereupon said taggers instead tag the data packets otherwise destined for the failed link to the extra link.

20. A switch node comprising:

a number N of first links and a number M of second links, all connecting first and second switch modules, each switch module including:

a fault detector to determine N number of currently operable ones of said N&M first and second links;

a switch core communicating between at least one device circuit and the first and second links to route data packets from the device circuits to at least the N number of currently operable first and second links; and

a device-side switch port interface between the device circuit and the switch core to add internal routing tags to the data packets identifying only the N number of currently operable first and second links; and

a link-side switch port interface between the switch core and the links to read the internal routing tags and route the data packets to the N number of currently operable first and second links.

21. A switch node according to claim 20, wherein:

N is one and M is one.

22. A switch node according to claim 20, wherein:

N is at least two and M is one.

23. A switch node according to claim 20, wherein:

N is at least two and M is at least two.

24. A switch node according to claim 20, further including:

N+M number of link exchanges coupled between the switch core and corresponding ones of the first and second links; and wherein:

the link-side switch port interface includes N+M link-side switch port interfaces, one per link exchange.

25. A switch node according to claim 20, wherein:

each switch module includes device circuits, and

the device-side switch port interface includes multiple device-side switch port interfaces, one per device circuit.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
Before the Board of Patent Appeals and Interferences

In re Patent Application of

LUNDH et al.

Serial No. 09/514,144

Filed: February 28, 2000

Title: INTERCONNECTION LINK REDUNDANCY IN A MODULAR SWITCH NODE

Atty Dkt. 2380-57
C# M#
TC/A.U.: 2666
Examiner: M. Jagannathan
May 14, 2004

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

☐ **Correspondence Address Indication Form Attached.**

☐	**NOTICE OF APPEAL** Applicant hereby **appeals** to the Board of Patent Appeals and Interferences from the last decision of the Examiner. ($ 330.00)	$	
☒	An appeal **BRIEF** is attached in triplicate in the pending appeal of the above-identified application ($ 330.00)	$	330.00
☐	Credit for fees paid in prior appeal without decision on merits	-$ (	)
☐	A reply brief is attached in triplicate under Rule 193(b)		**(no fee)**
☐	Petition is hereby made to extend the current due date so as to cover the filing date of this paper and attachment(s) (**$110.00/1 month**; $420.00/2 months; **$950.00/3 months**; $1480.00/4 months)	$	
	SUBTOTAL	$	330.00
☐	Applicant claims "Small entity" status, enter ½ of subtotal and subtract ☐ "Small entity" statement attached.	-$(	)
	SUBTOTAL	$	330.00
	Less month extension previously paid on	-$(	0.00)
	TOTAL FEE ENCLOSED	$	330.00

Any future submission requiring an extension of time is hereby stated to include a petition for such time extension. The Commissioner is hereby authorized to charge any deficiency, or credit any overpayment, in the fee(s) filed, or asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our **Account No. 14-1140.** A duplicate copy of this sheet is attached.

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By Atty: John R. Lastova, Reg. No. 33,149

Signature: John R. Lastova